DOCUMENT RESUME

ED 274 831 CE 045 210

AUTHOR Thompson, Cecelia; And Others
TITLE Introduction to Computers for Home Economics Teachers.
INSTITUTION Hawaii State Dept. of Education, Honolulu. Office of the Director for Vocational Education.
PUB DATE 86
NOTE 36p.
PUB TYPE Guides - Non-Classroom Use (055)

EDRS PRICE MF01/PC02 Plus Postage.
DESCRIPTORS *Computer Literacy; *Computer Oriented Programs; *Computer Software; Definitions; *Home Economics; *Microcomputers; Secondary Education
IDENTIFIERS BASIC Programing Language

ABSTRACT

Written in simple language and designed in a large-print format, this short guide is aimed at teaching home economics teachers to use computers in their classrooms. The guide is organized in six sections. The first section covers the basics of computer equipment and explains how computers work while the second section outlines how to use computers, including the disk operating system and the disk drive. The third section provides information on caring for computers, including general care and maintenance, handling the diskette, troubleshooting, and classroom security. In the fourth section, various teacher uses for computers are reviewed, such as computer programs for word processing, teacher planning, computer-aided instruction, evaluation and grade reports, building a software collection, creating software, and the BASIC programming language. The fifth section applies computer use to the home economics classroom and suggests content area applications for the various fields of home economics. The final section is a glossary of computer terminology. (KC)

****
* Reproductions supplied by EDRS are the best that can be made *
* from the original document. *
****

ED274831
HI85 13303 AN=12834 / HI 86 13301 AN=13781
NOV 18 1986

Introduction to Computers for Home Economics Teachers

By
Cecelia Thompson
Karyn Tada
Lori Shimomura

CE 045 210

U.S. DEPARTMENT OF EDUCATION
Office of Educational Research and Improvement
EDUCATIONAL RESOURCES INFORMATION CENTER (ERIC)

☐ This document has been reproduced as received from the person or organization originating it.

☐ Minor changes have been made to improve reproduction quality.

• Points of view or opinions stated in this document do not necessarily represent official OERI position or policy.

"PERMISSION TO REPRODUCE THIS MATERIAL HAS BEEN GRANTED BY

P. White

TO THE EDUCATIONAL RESOURCES INFORMATION CENTER (ERIC)."

Funding for this publication was provided by the Office of the State Director of Vocational Education, University of Hawaii, 1633 Bachman Place, Sinclair Annex 1, Room 4, Honolulu, Hawaii 96822. The initial drafts were reviewed by home economics educators and field tested at five computer workshops for home economics educators. This final publication is the result of this revision process.

It is the policy of the University of Hawaii to provide equity of opportunity in higher education, both in its educational mission and as an employer. The University is committed to comply with all state and federal statutes, rules and regulations which prohibit discrimination, including but not limited to Title VI and Title VII of the Civil Rights Act of 1964; Section 503 and Section 504 of the Rehabilitation Act of 1973; Section 402 of the Vietnam Era Veterans Readjustment Act of 1974, as amended; Title IX of the 1972 Education Amendments; the Equal Pay Act of 1963; Executive Order 11246, as amended; and the Age Discrimination Act of 1975.

NOV 18

Introduction to Computers for Home Economics Teachers

By

Cecelia Thompson

Karyn Tada

Lori Shimomura

Funds for this project were made available from The Office of the State Director for Vocational Education

Table of Contents

I. What is a computer..... 1

Computer hardware and software
How a computer works

II. Using your computer..... 8

Disk operating system
How to use the disk drive

III. Caring for your computer..... 10

General care and maintenance
Handling the diskette
Troubleshooting
Classroom security

IV. Selecting software..... 15

Word processing
Teacher planning
Computer aided instruction
Evaluation and grade reports
Building a software collection
Creating your own software
BASIC

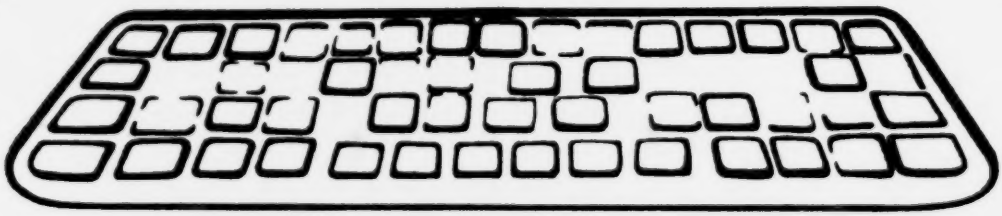
V. In the home economics classroom..... 20

Using one computer with 30 students
No food, no drink!!!
Integrating computer activities into curriculum
Content area applications

VI. Glossary..... 28

What is a computer?

A computer is a programmable electronic device that can store, retrieve, and process information. Symbolic data is manipulated according to a list of precise instructions called a program. Computers can teach, play games, draw pictures, help create music, and do word processing. It also completes monotonous tasks such as grading, inventory, or recordkeeping. A computer has two major components, called hardware and software.

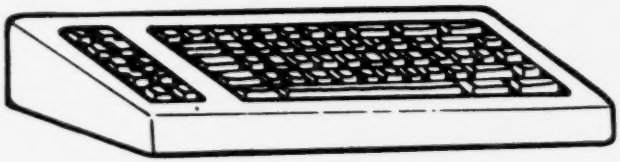


Hardware

Computer hardware is the collection of physical equipment which make up the computer system. There are four major types of hardware: the keyboard, the monitor, the printer, and the disk drive.

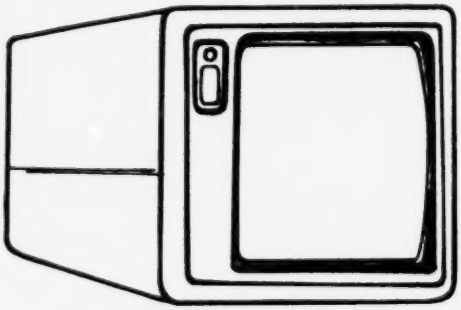
KEYBOARD

The keyboard looks like a typewriter, it has letters, numbers, and function keys. This device is used to input or feed information into the computer.



MONITOR

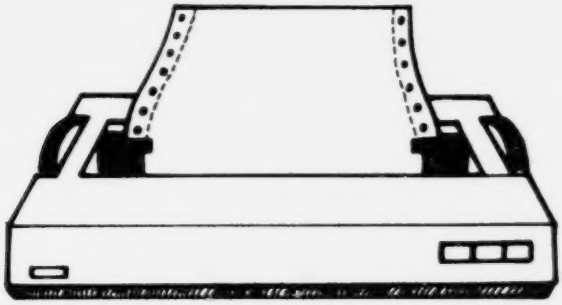
The monitor looks like a television set. It is an output device. A display of the information put into the computer appears on the screen so that it can be read and checked.



7

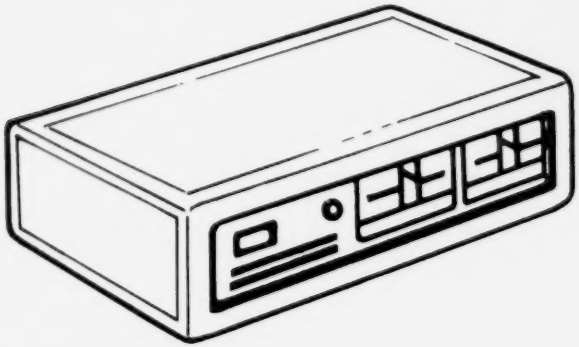
PRINTER

A printer is a device that prints information from the computer on paper. The printer is connected to the computer and provides a hardcopy of the output.



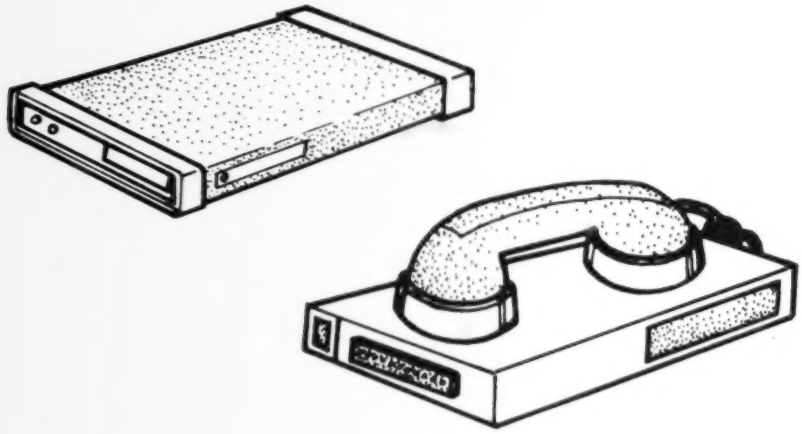
DISK DRIVE

The disk drive is used to store or read information on disks (thin, flexible plastic disk with a magnetic recording surface). The disk spins and the disk drive heads read the information magnetically coded on the disk.



MODEM

A modem is used to communicate with a distant computer over telephone lines. It converts the electrical impluses from the computer into tones so it may be transmitted over ordinary telephone lines. There are two types of modems--acoustic and direct connect. The acoustic modem or a coupler allows you to plug the standard telephone into the modem after another computer has been reached. Direct connect modems plug into a standard wall socket or jack for a telephone or into the headset of the telephone. A telephone may or may not be needed to connect to another computer.



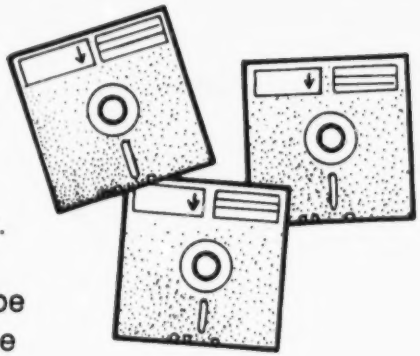
Some drawbacks in using the modem are that it may require an additional interface (connection that allows one part of the computer to work with another), a separate telephone line, special software, and a printer.

Computer Software

Computer software are computer programs that instruct the computer to perform given tasks. Information is stored on a disk or diskette, tape, punched cards, ROM cartridge, or tape reels and it can be retrieved upon request.

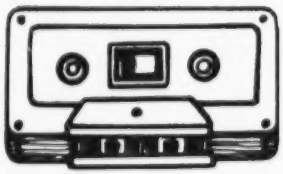
DISK OR DISKETTE

The diskette or floppy disk is a thin, flat, flexible circle of coated plastic. Data may be written on or read from the disk. Diskettes are widely available but expensive. Diskettes may be double or single sided and come in various sizes.



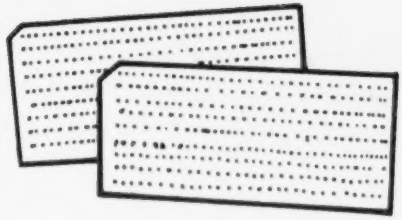
TAPE

The audio cassette tape is an inexpensive software storage device, but it is linear and very slow.



PUNCHED CARDS

This type of software storage was usually used with larger computers. The information was stored by a series of punched holes in the cards.

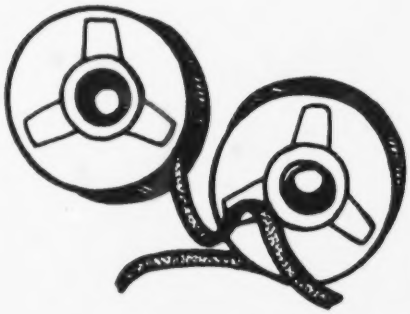


ROM CARTRIDGE

The ROM cartridge can transfer its information very rapidly, but it cannot store information or be modified. Familiar forms of ROM cartridges are video games.

TAPE REELS

Magnetic tape stored on reels is used for large computers. Reels can hold a large amount of information.



How A Computer Works

A computer uses three basic steps to process information.

INPUT

This is the initial step. The information
is fed into the computer
via a keyboard,
a disk,
a tape,
punched cards,
light pen,
or
a modem.

PROCESSING

During the second step the computer rearranges,
sorts, analyzes, and tests the data it has been
given.

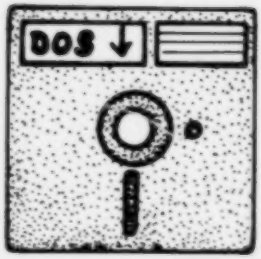
OUTPUT

This final step presents the answer, the response,
or the results. The output may appear on the
monitor screen, be transferred to disk
or tape, printed on paper, or
transmitted to another
computer via a modem.

Using your Computer

Disk Operating System

The disk operating system allows the computer to use programs. The DOS controls the movement of information from the computer memory and other computer devices. It simplifies the use of peripherals such as printers and disk drives.



How to use the Disk Drive

1. Before inserting your disk, always make sure the disk drive is not runnning.

2. **Never** open the door or push the lever while the drive is in use.

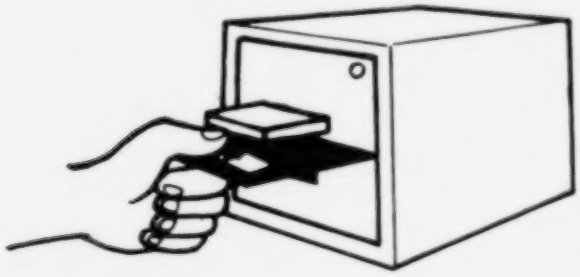
3. **Never** remove the disk when the drive is in operation or the disk will be ruined.

4. If the disk drive is not in use, open the door or push the lever to the horizontal position.

INSERTING THE DISK

1. Remove the disk from the the paper envelope or protector.

2. Hold the disk between your index finger and thumb, with your thumb on the top of the disk.

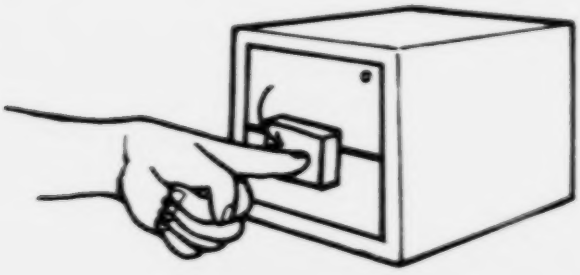


3. Be sure that the label is facing up and that it is closest toward you.

4. Gently slide the disk into the open slot of the disk drive so that the label side goes in last.

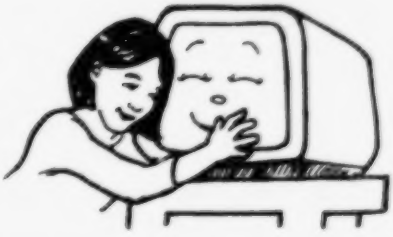
5. Do not force or bend the disk.

6. After the disk is all the way in the disk drive, carefully close the door or push down the lever.



Caring for Your Computer

As with any other equipment, a certain degree of care is required for successful use. With proper maintenance, many problems can be avoided.



General Care and Maintenance

Proper care will add to the life of your computer.

COMPUTER DO'S

1. Dust is damaging to disks and computers. Use lint free covers, and avoid chalk dust. Keep the disk drive closed, and absolutely no smoking in the computer room.

2. Computers need reasonable ventilation. Some computers are sensitive to heat. Disks are sensitive to both heat and radiation and should not be left near the monitor or on the disk drive. Air conditioning or fans can alleviate this problem.

3. Have a master on-off switch for all the computers in the room. Computers can remain on since the use of electricity is minimal. Class management is also made easier.

4. Use available computer cleaning products. Ask your dealer for a recommended disk drive cleaning kit, and use a lint free cloth to wipe the screen.

5. Buy a surge protector. Prevent damage to the hardware from electrical surges.

COMPUTER DON'TS

1. **No food or drinks in the computer room.** Besides added soil, any spills could mean a major repair or replacement of a computer component.

2. **Avoid jarring computer parts**. Saving original cartons for the hardware may help in preventing damage in transporting the computer.

3. **Computers are sensitive to static electricity**. Avoid carpeting in the computer room.

In addition to general care, this simple schedule can also insure a proper working system with minimal repairs.

WEEKLY

1. Check ventilation system.

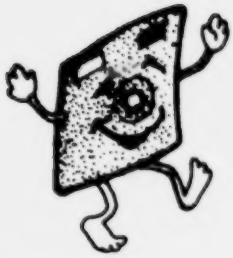
2. Inspect cables connecting computer hardware.

MONTHLY

1. Remove accumulations of dust and dirt.

2. Clean disk drives. (Caution: Too frequent cleaning can also damage the disks drive.)

3. Remove paper shreds and fibers from inside the printers.

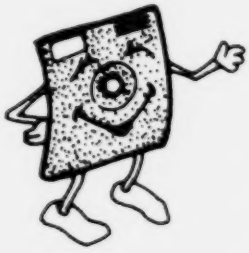


ONCE OR TWICE A YEAR

1. System should be stripped, cleaned and reassembled. Check the maintenance agreement with your computer dealer.

Handling the Diskette

The diskette is somewhat similar to a record and special attention must be applied to insure its long life and to maintain proper input/output functions.



DISKETTE DO'S

1. Use a felt tip pen to label the disk.
2. Hold the disk by its jacket.
3. Keep disks away from electrical or magnetic devices.
4. Gently insert the disk into the disk drive.
5. Store disks upright in their jackets.

DISKETTE DON'TS

1. Do not place disks on greasy or dirty surfaces.

2. Avoid extreme temperatures and moisture.

3. Do not bend or attach paper clips to disks.

4. Do not remove disk from drive if it is loading information and the disk drive light is glowing.

Troubleshooting

If your computer seems to be giving you trouble, follow this self-help checklist before calling the repairperson.

1. Check information in software and hardware manuals.

2. Check all cord connections.

3. Try to pinpoint the problem to the software or hardware.

4. Check if the disk is placed in the drive correctly.

5. Check the chips on the main (mother) board. They may have become loose and need to be adjusted. Make sure the power is off.

6. Use a disk drive cleaning kit.

Some problems will need professional attention. For better service, take time out to make a written description of the problem.

1. Is the problem isolated to one hardware component?

2. Does the problem occur after a long or short time of use?

3. Does it vary in occurance? Constant or random?

4. Keep a record of previous problems and repairs.

Classroom Security

Security is a prime concern, and precautions must be taken. Here are some ideas to relieve some of your worries.

1. Centralize computers to a specific room.

2. Bolt hardware to tables.

3. Have the school invest in an alarm system.

4. Insure proper supervision by an teacher or reliable adult.

Selecting Software

Home economics teachers can purchase or create software that will help them in every step of the teaching process. Lesson plans and handouts can be created with word processing programs and stored systematically with a filing program. Day to day preparation and planning can be aided with graphics programs, microcookbook programs and inventory programs. Computer-aided instruction can provide learners with individual and group activities. Evaluation and grade reporting can be simplified with test generation and grading software.

Word Processing

Word processing software turns a microcomputer into a storage, editing, and printing system. Lesson plans and handouts can be typed, stored, and organized on a disk rather than in the filing cabinet. A printed or hard copy can be produced when it is needed with the use of a printer. Changes in lessons or handouts are made easily with the editing functions. Words can be corrected or deleted, lines or paragraphs can be moved, punctuation can be corrected, and new ideas can be added.

Word processing programs vary in price and capability. A simple program, such as Bank Street Writer, is appropriate for learners. It is easy to learn and use. A teacher may prefer a program with more features, such as Apple Works, Apple Writer, or Word Star.

Teacher Planning

Posters, signs, and newsletters can be produced with inexpensive, simple to use programs such as Print Shop and Newsroom. These programs feature a variety of graphics and print styles. Other programs will easily produce crossword and word search puzzles.

Planning for food laboratories can be a snap with microcookbook and inventory programs. Recipe information, stored on a microcookbook data disk, can be used to generate shopping lists and printed copies of recipes. Changes in the size of recipes are simple to perform. Inventory of classroom and food supplies may be stored, edited, and printed using an inventory program.

Computer-Aided Instruction

Classroom instruction can be enhanced with courseware--software created for use in the classroom. Drill and Practice courseware presents a concept repeatedly and requires a learner to respond to programmed questions. Tutorial programs present information about a topic followed by questions about the subject matter. Both have prompts to indicate an incorrect answer. Simulation courseware describes a situation and requires learners to make a decision based on given information. Instructional games employ a set of rules and usually require a strategy.

Other commercial software can be adapted for educational use. Spread sheets can be used to analyze and store financial data, predict the outcome of expenditures in a proposed business venture, and study income tax calculations.

Learners can use word processing programs to produce written assignments for class. The ability to edit without retyping encourages them to make corrections and additions.

Evaluation and Grade Reports

Storing and generating tests on the computer saves time and typing. Software programs for test generation store a bank of questions and create many different tests from the same group of questions. New questions are easily added and old questions are easily deleted.

Maintaining records is a snap with a grading program. Grading software will alphabetize class lists, store attendance records, list comments, and calculate grades. Grade weights and percentages can be easily set or changed if you want to try a different system. Individual grade sheets summarizing grades, missing assignments, attendance, comments, and projected or actual grade can be printed for each student. A class list with grades, attendance, mean, standard deviation, and frequencies can be printed out for office use.

Building a Software Collection

Choose software carefully based on the recommendations of fellow teachers, reviews in periodicals, and hands-on trials at the dealer. Always check the following:

* Is it compatible for your computer and printer?

* Is it from a reputable dealer?

* Is the documentation (user's manual) easy to follow?

* Is it interesting and challenging?

* How many learners can use the program at one time?

* Will learners need teacher assistance?

Creating Your Own Software

With a little experience and a book or course on programming, you can begin to create your own software to meet the needs of your learners. This process is fun and exciting, but it takes time and effort to plan, list, enter, and debug a program. Programs are also listed in many popular computing magazines, and you can adapt these programs to meet your needs. When you are able to create software, you have reached "programmer status".

BASIC

BEGINNER'S

ALL-PURPOSE

SYMBOLIC

INSTRUCTION

CODE

```
10  HOME
20  PRINT "HOW MANY NUMBERS WOULD YOU"
30  INPUT "LIKE TO AVERAGE?";N
40 DIM  A(N)
50 HOME
60 SM = 0
70 FOR I = 1 TO N
80 PRINT "WHAT IS VALUE #";I;
90 INPUT A(I)
100 SM = SM+A(I)
110 NEXT I
120 AV = SM/N
130 HOME
140 PRINT "INDEX","VALUE"
150 PRINT
160 FOR I = 1 TO N
170 PRINT I,A(I)
180 NEXT I
190 PRINT
200 PRINT "THE AVERAGE OF YOUR"
210 PRINT "VALUES IS";AV;"."
```

Basic is a language developed for computer novices. It is easy to learn and use for a variety of purposes.

In the Home Economics Classroom

Using One Computer with 30 Students

With constrained budgets, there are usually far fewer computers than students. A typical situation is one computer per classroom. In such cases, special arrangements must be made for student use of the computer.

1. Integrate the computer related material so that some students can use the computer while the other students are involved in a related activity.

2. Enforce time limits.

3. Place the computer in a separate room from the class, yet visible to the teacher. This avoids added distractions.

No Food No Drink!!! Rules for Computer Use

For successful classroom use of the computer, reasonable rules and guidelines must be addressed. The following are areas that teachers should deal with according to their own style of teaching and classroom management (with the exception of #1 and #2).

1. Allow no food or drinks in the computer room.

2. Use the computer with proper care.

3. Set a specific length of time of use when others are waiting.

4. Specify priority of computer use. (For example, classwork vs. games.

5. Allow only 1-3 students per computer to control noise level and promote positive learning atmosphere.

6. Incorporate information on computer care and maintenance into regular classroom lessons.

Integrating Computer Activities into the Currriculum

To benefit the most from this innovative tool, use the computer to complement and add to your own curriculum and teaching strategies.

THINGS TO KEEP IN MIND

1. Computer programs should be carefully related to curriculum and teaching methods.

2. Establish your objectives for computer use.

3. Determine students' prior knowledge of computers.

4. Use activities that will maximize learning with the computer.

5. Activities should be short and meaningful and overlap in other areas of home economics.

6. Evaluate program effectiveness for yourself, as well as the students.

7. Have students do all preparation work before using the computer.

THINGS TO AVOID

1. Avoid computer activities that can be done with paper and pencil.

2. Avoid frustrating programs and activities.

3. Don't use the computer as a replacement for the teacher.

4. Don't set aside a week or so just to use the computer. Blend computer use into regular classroom assignments and activities.

Content Area Applications

The following section offers some suggestions for computer applications in the major Home Economic areas. Keep your own curriculum and teaching strategies in mind and consider how they can be used with the computer.

CHILD CARE

1. Have students work in groups to devise guidelines for selection and evaluation of software for specific age ranges of children.

2. Visit an elementary or pre-school that uses computers and make observations in relation to learning, interest levels, skills used and childrens' posture or physical effects.

3. Have students plan lessons to teach children a specific computer skill or concept.

FOODS AND NUTRITION

1. Visit a computerized store. Have the manager explain the advantages and disadvantages for the store and the consumer.

2. Discuss the Univeral Product Code and how it relates to supermarket shopping.

3. Have the students discover the advantages and disadvantages of using the computer for recipe storage food inventory and meal planning. Where would be the most effective location for the computer?

HOME MANAGEMENT

1. Have students look for computers within their own homes, (clocks, microwave ovens, VCR's, cars, etc.). What effect does it have on the family?

2. Ask students to describe how computers can be used in the home and how it can assist in home management, (record keeping, word processors, financial analyst, tutor, entertainer, etc.).

3. Have students use and evaluate home management software. Did they find the programs practical or not. Why?

FAMILY LIVING

1. Ask students how computer technology will affect families and society in the near future. What kind of changes can be predicted in relation to work and the family?

2. Have a class discussion or debate about the pros and cons of computers. Is it humanizing or depersonalizing American living?

3. Ask the students their feelings about computer storage of private information. What are the benefits and problems?

CONSUMER EDUCATION

1. Have students conduct a survey to find out what computers are used the most and why. Also, what type of programs are utilized most frequently.

2. Ask a computer specialist to visit to discuss the different types of computers available to the consumer. Have them compare hardware features (keyboard, memory, color, sound, etc.).

3. Have students make a list of their personal needs and purposes for owning a computer. With this information list, students will select a computer best suited for themselves.

FHA AND HERO

1. Have club members make posters that demonstrate how the computer is used in planning activities.

2. Prepare club materials such as pamphlets, newsletters, and flyers.

3. Have club members conduct a computer workshop to introduce future members to FHA/HERO.

CAREERS

1. Have a discussion about computers in the workplace. What are the advantages the disadvantages? What jobs have been made "obsolete" or more productive? What does this mean to the students?

2. If work could be done at home, what would be the effect on society? What would be the ideal work situation?

3. Have students share a career interest. Will computer knowledge be used in that career? How do the students view computers in relation to their career aspirations?

Glossary

Backup copy	An extra copy of software
BASIC	**B**eginner's **A**ll-purpose **S**ymbolic **I**nstruction **C**ode. The most popular language for micro-computers.
Bit	**B**inary digi**t**. The smallest unit of code that computers use.
Boot	Starting the computer system
Bug	A flaw in computer software or hardware
Byte	A string of electric pulses that the computer reads.
Cartridge	A plastic case that holds magnetic tape or disk, such a pac man cartridge.
Cassette	A plastic case with a tape inside for recording computer data. The least expensive way to store computer programs.
CPU	**C**entral **P**rocessing **U**nit. The integrated circuits that input, manipulate, store, and output data.
Chip	A tiny piece of silicon with paths called circuits that do the work of the computer.

Computer	A device that can receive, store, and retrieve information.
Copy Protected	A process that prevents copies from being easily made from an orginal disk.
CAI	**C**omputer **A**ided **I**nstruction. Using educational software to help students learn.
Computer Literacy	Understanding how to use computers and how they affect our lives.
Cursor	A blinking point on the moniter screen.
Data	Any information you give a computer.
Debugging	Correcting mistakes
Disk	A circular object used to store data.
Disk Drive	A device that reads information and data into the computer's memory or saves information onto a disk.
Disk Operating System	A set of instructions that tells a computer how to use a magnetic disk drive.
Documentation	User's manual for commercial software. Remarks at the beginning of a program.
File	A collection of information stored as a named unit usually on a disk

Format	The process of preparing a blank disk to receive information. Also called **Initialize.**
Graphics	Pictures or graphs shown on the moniter.
Hard Copy	Printed copy of output.
Hardware	Every part of the computer except the programs you write or run.
Initialize	The process of preparing a blank disk to receive information. Also called **Format.**
Input	Giving information to the computer by way of disk, tape, modem, graphics tablet, light pen, etc.
Keyboard	The part of the computer that looks like a typewriter.
Language	The symbols you use to talk to a computer.
Load	The transfer of information into the working memory of the computer.
Log on	To send a message to a central computer that you want to begin work.
Mainframe	The central processing unit of a large computer.
Memory	Information stored permanently or temporarily in the memory chip.

Menu	A list of choices shown on the screen before you begin to work.
Microcomputer	A small computer with the central work area located on a tiny chip.
Modem	**M**odulater-**D**emodulater. A device that allows computers to talk over telephone lines.
Operating System	Instructions that tell the computer how to handle programs you give it. A popular operating system for microcomputers is the **C**ontrol **P**rogram for **M**icrocomputers(**CP/M**)
Output	Moving information out of the computer by way of the moniter screen, disk, tape, modem, or printer.
Printed Circuit Board	The board on which the chips sit.
Printer	The device used to print a hard copy of output. It may be dot matrix, daisywheel, ink jet, thermal, or laser.
Program	Instructions to the computer.
Save	A command that tells the computer to transfer your work to disk or tape.
Software	Instructions to the computer. Programs you write or buy on disk or tape.

Terminal	The equipment you use to give and get data from a computer.
Word Processing	The use of a computer to create text.
Write-Protect	A method of protecting information on a disk by covering the write-protect notch.